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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,284	11/15/2001	Dong Wu	56530US002	9016

32692 7590 04/20/2007  
3M INNOVATIVE PROPERTIES COMPANY  
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EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/20/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/20/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

LegalUSDocketing@mmm.com  
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## Office Action Summary

Application No.

10/000,284

Applicant(s)

WU ET AL.

Examiner

Callie E. Shosho

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1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

**Claim Rejections - 35 USC § 103**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-2, 4, 6, 8-9, 15-27, and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (U.S. 2003/0236321) in view of Krepski et al. (U.S. 5,929,160).

The rejection is adequately set forth in paragraph 4 of the office action mailed 9/28/06 and is incorporated here by reference.

3. Claims 1-5, 9-16, 23-25, 27, 31, and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (U.S. 5,889,083) in view of Krepski et al. (U.S. 5,929,160).

The rejection is adequately set forth in paragraph 5 of the office action mailed 9/28/06 and is incorporated here by reference.

4. Claims 1-2, 4-12, 15-16, 23-25, 27-30, and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdtmann et al. (U.S. 6,533,408) in view of Krepski et al. (U.S. 5,929,160).

The rejection is adequately set forth in paragraph 6 of the office action mailed 9/28/06 and is incorporated here by reference.

**Response to Arguments**

5. Applicants' arguments filed 1/29/07 have been fully considered but they are not persuasive.

Specifically, applicants argue that there is no motivation to combine Sano et al., Zhu, or Erdtmann et al. with Krepski et al. given that the combination of references relies on the desirability of characteristics presented by Krepski et al., namely, toughness, weatherability, enhanced adhesion, and abrasion resistance, however, there is no mention in any of Sano et al., Zhu, or Erdtmann et al. of a lack of these characteristics and thus, a *prima facie* case of obviousness has not been made.

However, it is noted that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Secondly, there must be a reasonable expectation of success. Thirdly, the prior art references must teach or suggest all the claim limitations.

With respect to the first criteria, it is noted that each of Sano et al., Zhu, and Erdtmann et al. disclose ink jet ink comprising aqueous medium, pigment, and polymer, i.e. polyurethane, however, there is no disclosure in any of the references of specific polymer, i.e. silyl terminated sulfopoly(ester-urethane), as presently claimed. This is why each of the references is used in combination with Krepski et al. which disclose the use of silyl terminated sulfopoly(ester-urethane) in coatings for paper wherein the coatings of the Krepski et al. contain similar ingredients to those used in ink jet inks, i.e. water, pigment, dispersant, etc. Krepski et al. also

disclose motivation for using silyl terminated sulfopoly(ester-urethane), i.e. toughness, weatherability, abrasion resistance, and enhanced adhesion, which are particularly relevant to the presently claimed ink jet ink. While there is no explicit disclosure in Sano et al. Zhu, or Erdtmann et al. that these characteristics, i.e. toughness, weatherability, abrasion resistance, and enhanced adhesion, are lacking, it would have been within the skill level of, as well as obvious to one of ordinary skill in the art, to impart such properties to the ink of each of Sano et al., Zhu, and Erdtmann et al. in order to produce ink with good toughness, weatherability, abrasion resistance, and enhanced adhesion so that the ink does not crack, fade, smear, etc.

With respect to the second criteria, it is the examiner's position that there is a reasonable expectation of success for the following reasons.

Krepiski et al. disclose that the silyl-terminated sulfopoly(ester-urethane) has number average molecular weight of less than 50,000 (col.2, lines 42-45) which would overlap the molecular weight of the polymers utilized in each of Sano et al., Zhu, and Erdtmann et al. which disclose the use of polymer having molecular weight of 3,000-100,000 (Sano et al. – paragraph 62), approximately 5,000-30,000 (Erdtmann et al. – Table 1), and 1,500-50,000 (Zhu – col.4, lines 62-47). Additionally, it is noted that Krepiski et al. disclose the use of silyl-terminated sulfopoly(ester-urethane) in polymer solution having viscosity of 1-50,000 cP (col.10, lines 47-48), the lower end of which would clearly meet the viscosity requirement of ink jet inks (see page 9, lines 12-15 of the present specification). Further, example 37 of Krepiski et al. disclose the use of silyl-terminated sulfopoly(ester-urethane) having particle size of 93 nm which particle size would clearly be suitable for use in ink jet inks. Evidence to support this position is found in Table 1 of Erdtmann et al. which discloses ink jet ink comprising polymer having particle size of

about 8-300 nm and col.4, lines 55-61 of Zhu which discloses that the polymer must have particle size less than 1 $\mu$ m which is the size of printer capillary tube.

Thus, Krepski et al. not only disclose the use of silyl-terminated sulfopoly(ester-urethane) in coatings for paper but that the silyl-terminated sulfopoly(ester-urethane) also meets rheological, i.e. molecular weight and viscosity, and physical, i.e. particle size, requirements necessary for ink jet inks and thus, it is the examiner's position that one of ordinary skill in the art would have a reasonable expectation that the silyl-terminated sulfopoly(ester-urethane) would jet out of ink jet head.

Thus, given that Krepski et al. disclose the use of silyl-terminated sulfopoly(ester-urethane) in order to impart toughness, weatherability, abrasion resistance, and enhanced adhesion to coatings on paper which are functions especially important to ink jet inks which are also utilized on paper, given that the composition of Krepski et al. utilizes similar ingredients as ink jet inks, i.e. water, pigment, dispersant, etc., and given that Krepski et al. disclose the use of silyl-terminated sulfopoly(ester-urethane) which would appear to meet the rheological and physical requirements necessary in ink jet inks, it is the examiner's position that one of ordinary skill in the art would have a reasonable expectation of success that the silyl-terminated sulfopoly(ester-urethane) would function in the ink jet ink of Sano et al., Erdtmann et al., or Zhu.

With respect to the third criteria, it is the examiner's position as set forth in paragraphs 2-4 above, that the combination of Sano et al., Zhu, or Erdtmann et al. with Krepski et al. meets the requirements of the present claims against which each combination is applied.

In light of the above, it is the examiner's position that a *prima facie* case of obviousness has been made.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho  
Primary Examiner  
Art Unit 1714

CS  
4/14/07